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| 10/815,845 | 04/02/2004 | Catherine Martinelli | Q80562 | 9689 |

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EXAMINER

DIACOU, ARI M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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3663

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,845

Applicant(s)

MARTINELLI ET AL.

Examiner

Ari M. Diacou

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-18 is/are pending in the application:
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 11-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims 11-13 and 17 contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The use of the functions $MIN_{i,j}$ and MIN_i are not specifically pointed out in the disclosure, and are not standard in the art. In the interest of expedited prosecution, the examiner assumes that $MIN_{i,j}(f(i,j))$ is taken to mean the expression $f_{\min}(i,j)$ which has a minimum numerical value, where f_{\min} is taken from the set of all expressions f where i and j vary independently as allowed by the invention. In other words, f_c is the lowest frequency signal transmitting deliberate information that can be ascertained from the multiplexed input signals and pumping signals.

3. As presently set forth, the pump modulator is essentially a black box with no description of the internals thereof. The disclosure is thus insufficient in failing to set forth in an adequate and sufficient fashion, a description of the internals of the pump modulator which would enable the device to perform all of the features (i.e., calculating the corner frequency etc.) that are disclosed and claimed. If applicant is of the opinion

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that there is a description in the prior art (in the form of literature, etc. having a date prior to the filing date of this application), of the internals of the pump modulator that can accomplish the disclosed and claimed features (i.e., calculating the corner frequency etc.), copies of said literature, etc., must be submitted for appropriate review by the Office. See In re Ghiron et al, 169 USPQ 723, 727.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Grant et al. (USP No. 6611368).

- Regarding claim 11, Grant discloses A Raman amplifying device *for amplifying signals* (S_1, S_2, \dots, S_N) *with wavelengths is* ($\lambda_{S1}, \lambda_{S2}, \dots, \lambda_{SN}$) comprising
 - an optical path [Fig. 4, #425] [Col. 4, lines 20-36],
 - pump sources (P_1, P_2, \dots, P_N) *for generating a plurality of Raman pump signals* ($\lambda_1, \lambda_2, \dots, \lambda_N$) *for backward pumping*[Fig. 4, #401] [Col. 4, lines 20-36] and

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- means for coupling ($2_1, 2_2, \dots 2_N$) the plurality of Raman pump signals into the optical path, [Fig. 4, #426] [Col. 4, lines 20-36]
- wherein the plurality of optical Raman pump signals are time-division multiplexed by multiplexing controlling means ($4_1, 4_2, \dots 4_N$) characterized in that the time-division multiplexing frequency is higher than the minimal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signals ($S_1, S_2, \dots S_N$) and the pumps ($P_1, P_2, \dots P_N$):

$$f_C = \text{MIN}_{i,j} \left\{ \frac{\alpha_{P_i}}{2\pi \left| \frac{1}{V_{S_j}} - \frac{1}{V_{P_i}} \right|} \right\}$$

where V_{S_j} and V_{P_i} are the group velocities of the signal S_j and the Raman pump signal P_i , α_{P_i} is the attenuation of the fiber at the pump wavelength λ_{P_i} .

- Regarding claim 12, Grant discloses a Raman amplifying device for amplifying signals ($S_1, S_2, \dots S_N$) according to claim 11 characterized in that the controlling means multiplex the pumps in time so that the pumps that give significant gain to a signal S_k and the pumps that do not give significant gain to the signal S_k are alternated in time at a frequency that is higher than the minimal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions

that implicate the signal S_k and the pumps (P_1, P_2, \dots, P_N) that give significant gain to S_k :

$$f_C = \text{MIN}_i \left\{ \frac{\alpha_{P_i}}{2\pi \left| \frac{1}{V_{S_k}} - \frac{1}{V_{P_i}} \right|} \right\}$$

where V_{S_k} and V_{P_i} are the group velocities of the signal S_k and the Raman pump signal P_i , α_{P_i} is the attenuation of the fiber at the pump wavelength λ_{P_i}

- Regarding claim 13, Grant discloses a Raman amplifying device according to claim 12 *characterized in that the signal S_k and the pumps that do not give significant gain to the signal S_k are alternated in time at a frequency that is higher than the maximal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signal S_k and the pumps (P_1, P_2, \dots, P_N) that give significant gain to S_k :*

$$f_C = \text{MAX}_i \left\{ \frac{\alpha_{P_i}}{2\pi \left| \frac{1}{V_{S_k}} - \frac{1}{V_{P_i}} \right|} \right\}$$

- Regarding claim 14, Grant discloses a Raman amplifying device according to claim 12 *characterized in that the controlling means multiplex the pumps in time so that the conditions expressed for S_k are fulfilled for all the signals S_k , $k=1$ to n .*
- Regarding claim 15, Grant discloses a Raman amplifying device according to claim 13 *characterized in that the controlling means multiplex the pumps in time so that the conditions expressed for S_k are fulfilled for all the signals S_k , $k=1$ to n .*

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- Regarding claim 16, Grant discloses a Raman amplifying device according to claim 11 with a fiber *wherein this fiber has a reduced corner frequency of the co-propagating modulation transfer functions.*
- Regarding claim 17 and 18, the method as claimed is merely the normal procedure of operation of the device.

6. The italicized clauses are essentially method limitations or statements or intended or desired use and are being examined as if the apparatus were capable of performing the functions described in said clauses. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim. In this case, light in any of its forms, frequencies, modulations, phases, polarizations or intensities is the article worked upon.

7. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Conclusion

8. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

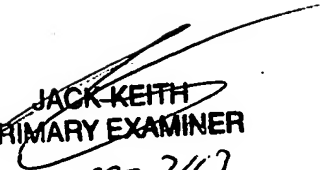
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AMD 9-12-2005


JACK KEITH
PRIMARY EXAMINER
SPE 3663